

**For discussion  
On 15 December 2008**

**Legislative Council  
Panel on Environmental Affairs**

**341DS - Harbour Area Treatment Scheme, stage 2A – Construction of the Sewage Conveyance System and Upgrading of Stonecutters Island Sewage Treatment Works and Preliminary Treatment Works**

**PURPOSE**

This paper seeks Members' support for the Administration's proposal to upgrade part of **341DS** to Category A at an estimated cost of about \$7,000 million in money-of-the-day (MOD) prices, prior to submission to the Public Works Subcommittee (PWSC) for consideration with a view to seeking Finance Committee's funding approval.

**PROPOSAL AND JUSTIFICATION**

2. The Harbour Area Treatment Scheme (HATS) is one of the most important environmental programmes undertaken in Hong Kong to improve the water quality of Victoria Harbour (the harbour). It involves the implementation of an integrated sewerage system that will collect and treat all of our sewage from both sides of the harbour in an efficient, effective and environmentally sustainable manner. Stage 1 of HATS was completed in 2001 and collects 75% of the sewage, or 1.4 million cubic metres a day, generated around the harbour (i.e. from Kowloon and the north-eastern part of Hong Kong Island) via almost 24 kilometres of deep tunnels and transfers it to Stonecutters Island Sewage Treatment Works (SCISTW) for treatment. HATS Stage 2A is the next phase in the programme to further improve the water quality of the harbour and also to cater for future growth in sewage flows. Stage 2A will collect the remaining 25% of harbour area sewage, or 450,000 cubic metres a day, not handled by Stage 1 and transfer it via deep tunnels for centralized treatment at the expanded SCISTW.

3. The HATS stage 2A comprises the construction of a sewage conveyance system (SCS) to collect sewage from the northern and south-western parts of Hong Kong Island to SCISTW for chemically-enhanced primary treatment (CEPT) and disinfection; the upgrading of eight preliminary treatment works (PTWs) along the route of the SCS; and the expansion and upgrading of the SCISTW to increase its

treatment capacity and provide disinfection treatment.

4. In April 2005, we reported to the Legislative Council Panel on Environmental Affairs (the Panel) the results of an intensive 5-month public consultation exercise (from June to November 2004) on the way forward for HATS together with the proposed implementation programme. Subsequently, another two meetings of the Panel, with deputations invited, were held to discuss the findings of the studies relating to HATS stage 2 and the 2-phase approach for the second stage. We further consulted the Panel in July 2005 on the initial funding for the time-critical elements of stage 2A, including the design of the SCS and the Environmental Impact Assessment (EIA), and secured the Panel's support. In December 2005, we upgraded **238DS** "Harbour Area Treatment Scheme, stage 2A – environmental impact assessment, investigations, tunnel conveyance system design" to Category A for the EIA, investigations, preliminary planning, and design of the tunnel conveyance system of HATS stage 2A.

5. In September 2006, we upgraded **341DS** to Category B for the construction works under the HATS stage 2A. In early 2007, Members of the Panel were also provided with progress updates on HATS stage 2 during the discussion on the proposal for applying the polluter-pays principle in the provision of sewage services. In July 2007, we upgraded **351DS** "Harbour Area Treatment Scheme, stage 2A – planning and design of the upgrading works of Stonecutters Island sewage treatment works and the preliminary treatment works" to Category A for the planning and design of the upgrading works for SCISTW and the PTWs. In January 2008, we upgraded **352DS** "Harbour Area Treatment Scheme, stage 2A – construction of advance disinfection facilities at Stonecutters Island sewage treatment works" to Category A for the construction of advance disinfection facilities.

6. The Government is committed to proceeding with HATS stage 2A with a view to commissioning it in 2014. To meet the target commissioning date, we need to carry out construction of the critical elements of the project ahead of other works. The critical elements include the SCS, which involves about 21 kilometres (km) of sewage tunnels at depths of up to 160 metres below sea level, advance preparation works for the expansion and upgrading of SCISTW including the deep excavation for the foundation of a new main pumping station (MPS) at SCISTW and an inter-connection sewage tunnel between the new MPS and the existing MPS at SCISTW. In view of the scale, complexity and the inherent risks associated with underground conditions, we plan to start these critical elements as early as possible.

7. In addition to the above time-critical works items mentioned in paragraph 6 above, we also plan to provide covers and deodourization facilities to the existing sedimentation tanks at SCISTW in accordance with the recommendations of the EIA report, so as to mitigate odour nuisance generated from the SCISTW as soon as

possible. To expedite the overall programme, we now propose to upgrade part of **341DS** to Category A for the construction of the above-mentioned time-critical works items and the odour mitigation measures at SCISTW. In parallel, we will continue with the design of the remaining components of HATS stage 2A, which consist of the expansion of SCISTW, installation of the permanent disinfection facilities and the upgrading of the eight associated preliminary treatment works on Hong Kong Island, with a view to inviting tenders in 2009.

8 Furthermore, to ensure accurate project costs are submitted to the PWSC, we are proceeding in parallel the tendering procedures on a no commitment basis. We aim to submit the project to the PWSC and Finance Committee for approval in June and July 2009 respectively.

## **PROJECT SCOPE AND NATURE**

9. The scope of the part of **341DS** which we propose to upgrade to Category A comprises:

- (a) the construction of a SCS consisting of sewage tunnels of total length of about 21 km and associated ancillary works;
- (b) the construction of advance preparation works for the expansion and upgrading of SCISTW within the SCISTW site; and
- (c) the provision of covers and deodourization facilities to the existing sedimentation tanks at SCISTW.

A layout plan showing the proposed works is at **Enclosure 1**.

10. We plan to commence construction of the proposed works in mid 2009 for completion in end 2014.

## **FINANCIAL IMPLICATIONS**

11. We estimate the capital cost<sup>1</sup> of the proposed works to be about \$7,000 million in MOD prices.

12. We estimate that the construction of the proposed works will create

about 1 925 jobs<sup>1</sup> (1 562 for labourers and another 363 for professional/technical staff) providing a total employment of 87 548 man-months.

## **PUBLIC CONSULTATION**

13. Between 2006 to 2008, we consulted the relevant committees of the Eastern District Council, Wan Chai District Council, Central and Western District Council, Southern District Council, Sham Shui Po District Council and Kwai Tsing District Council as well as Wah Fu and Pokfulam Area Committee regarding the HATS stage 2A SCS. In 2006 and 2008, we also consulted the Subcommittee on Harbour Plan Review of the Harbourfront Enhancement Committee regarding the proposed layout design of SCS facilities at Fung Mat Road, Sai Ying Pun. Members supported the proposed works in all of these meetings. In addition, the relevant committee of the Sham Shui Po District Council was also consulted regarding the proposed covering of the existing sedimentation tanks at SCISTW and Members urged the early completion of the proposed works to mitigate the existing odour nuisances.

14. A list of the committee meetings of the District Councils, Wah Fu and Pokfulam Area Committee and the Harbourfront Enhancement Committee attended is at **Enclosure 2**.

## **ENVIRONMENTAL IMPLICATIONS**

15. The proposed work is a designated project under the EIA Ordinance and an environmental permit is required for its construction and operation. The EIA report was endorsed by the Advisory Council on the Environment on 8 October 2008 and approved under the EIA Ordinance on 30 October 2008. The EIA report concluded that the project will significantly reduce the pollution loads being discharged into Victoria Harbour and improve the water quality of the Harbour. The report further confirmed that with the implementation of the recommended mitigation measures, the environmental impacts of the proposed works can be controlled to within the standards and guidelines under the EIA Ordinance and the Technical Memorandum on the EIA Process. We shall implement the mitigation measures recommended in the approved EIA report.

16. For short term impacts during construction, we will control noise, dust and site run-off to levels within established standards and guidelines, through the implementation of mitigation measures such as the use of noise enclosures to reduce noise generation, water-spraying to reduce dust emission and proper pre-treatment of

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<sup>1</sup> These are the latest estimates of the capital cost and new job opportunities. We will finalize the project costs and new job opportunities, and include the cost breakdown, prior to submitting the proposals to the PWSC for consideration.

site run-off. We will carry out a comprehensive environmental monitoring and audit programme to ensure compliance with the environmental permit requirements. We will also carry out site inspections to ensure that these recommended mitigation measures and good site practices are properly implemented.

17. We have considered in the planning and design stages ways to reduce the generation of construction waste where possible. In addition, we will require the contractors to reuse inert construction waste including excavated rock, soil and demolished concrete for backfilling on site or in other suitable construction sites as far as possible, in order to minimize the disposal of inert construction waste to public fill reception facilities<sup>2</sup>. We will encourage the contractors to maximize the use of recycled or recyclable inert construction waste, as well as the use of non-timber formwork to further minimize the generation of construction waste.

18. We will also require the contractor to submit for approval a plan setting out the waste management measures, which will include appropriate mitigation means to avoid, reduce, reuse and recycle inert construction waste. We will ensure that the day-to-day operations on site comply with the approved plan. We will require the contractors to separate the inert portion from non-inert construction waste on site for disposal at appropriate facilities. We will control the disposal of inert construction waste and any non-inert construction waste to public fill reception facilities and landfills respectively through a trip-ticket system.

19. We estimate that the project will generate in total about 1 940 000 tonnes of construction waste. Of these, we will deliver 840 000 tonnes (43%) of inert construction waste which are granitic rocks to Lam Tei Quarry for processing into aggregate for commercial use, and deliver 1 090 000 tonnes (56%) of inert construction waste to public fill reception facilities for subsequent reuse. In addition, we will dispose of 10 000 tonnes (1%) of non-inert construction waste at landfills. The total cost for accommodating the construction waste at public fill reception facilities and landfill sites is estimated to be about \$30.7 million for this project (based on a unit cost of \$27/tonne for disposal at public fill reception facilities and \$125/tonne<sup>3</sup> at landfills).

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<sup>2</sup> Public fill reception facilities are specified in Schedule 4 of the Waste Disposal (Charges for Disposal of Construction Waste) Regulation. Disposal of inert construction waste in public fill reception facilities requires a licence issued by the Director of Civil Engineering and Development.

<sup>3</sup> This estimate has taken into account the cost for developing, operating and restoring the landfills after they are filled and the aftercare required. It does not include the land opportunity cost for existing landfill sites (which is estimated at \$90/m<sup>3</sup>), nor the cost to provide new landfills, (which is likely to be more expensive) when the existing ones are filled.

## **SLUDGE TREATMENT AND DISPOSAL**

20. At present, the sludge from HATS Stage 1 is being disposed of at the existing landfills. Following full commissioning of HATS Stage 2A, it is estimated that the quantity of dewatered sludge generated by SCISTW would be increased from the present about 600 tonnes per day to more than 1 000 tonnes per day under ultimate development scenario. A Sludge Treatment Facility is being planned by the Environmental Protection Department with a view to commissioning it in 2012 to provide a sustainable sludge treatment and disposal solution for the dewatered sludge generated by SCISTW as well as other sewage treatment works.

## **IMPROVEMENT OF WATER QUALITY OF TSUEN WAN BEACHES**

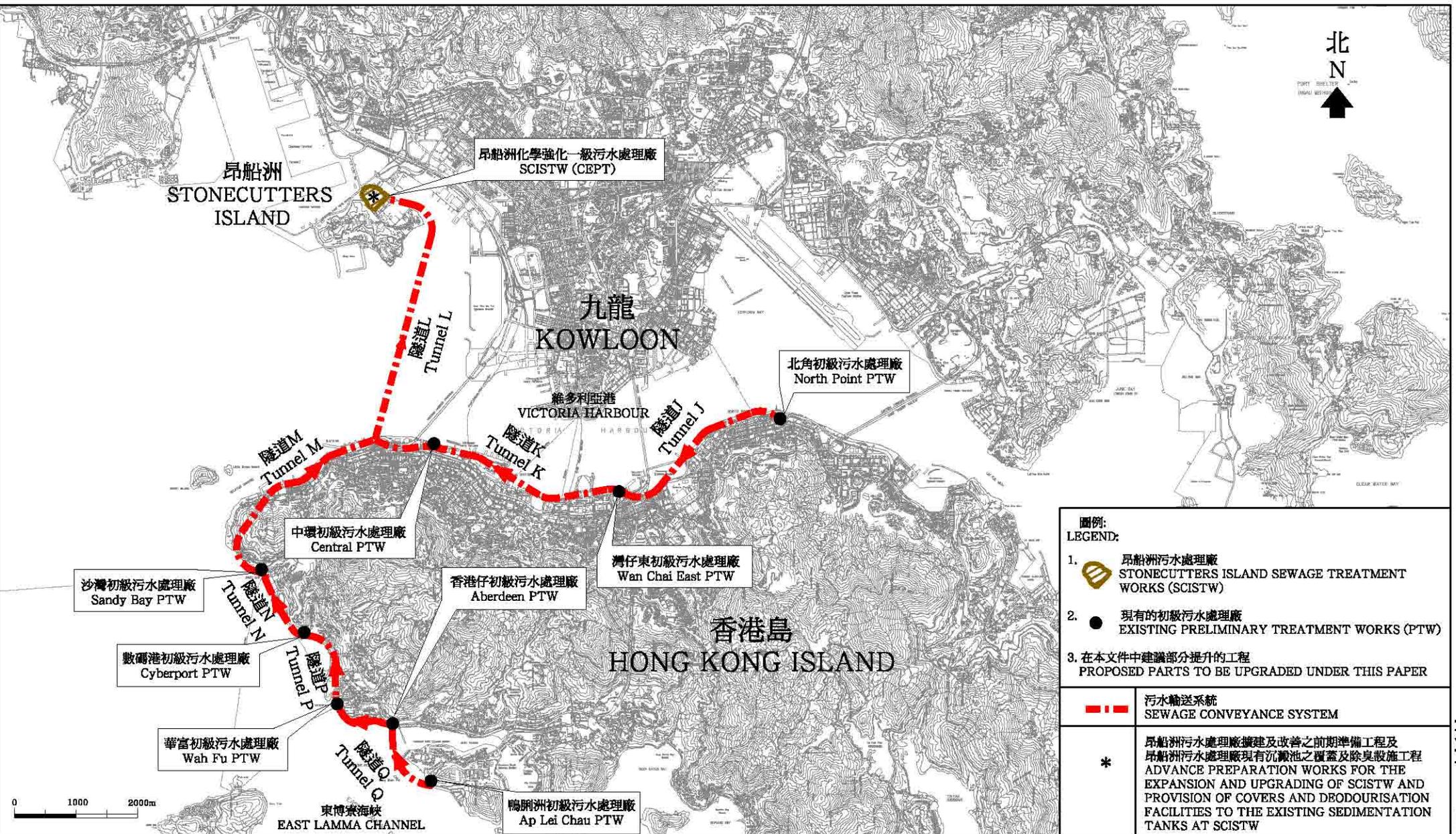
21. To tackle the water quality problem in respect of the bacteria levels on the western side of Victoria Harbour and at the Tsuen Wan beaches, the Government is now implementing improvement works, including the provision of disinfection facilities at SCISTW under HATS stage 2A, as well as local sewerage programmes in the area. In particular, part of the HATS disinfection facilities has been advanced for completion in end 2009, so as to reduce bacteria levels in the western Harbour water and facilitate the early re-opening of the closed Tsuen Wan beaches. The construction of the advance disinfection facilities commenced in April 2008.

22. At the same time, we are progressing with the installation of new public sewers in the beach hinterlands at Sham Tseng and Ting Kau, and the works are scheduled to be completed in end 2009. When the local public sewers are in place, the unsewered properties will be connected to them to help reduce water pollution.

## **ADVICE SOUGHT**

23. Members are invited to support the Administration's proposal to upgrade part of **341DS** to Category A at an estimated cost of about \$7,000 million in MOD prices for consideration by the Public Works Subcommittee in June 2009 with a view to seeking funding approval by the Finance Committee in July 2009.

Environmental Protection Department  
December 2008



- 圖例:**  
**LEGEND:**
-  昂船洲污水處理廠  
STONECUTTERS ISLAND SEWAGE TREATMENT WORKS (SCISTW)
  -  現有的初級污水處理廠  
EXISTING PRELIMINARY TREATMENT WORKS (PTW)
  -  在本文件中建議部分提升的工程  
PROPOSED PARTS TO BE UPGRADED UNDER THIS PAPER

	污水輸送系統 SEWAGE CONVEYANCE SYSTEM
*	昂船洲污水處理廠擴建及改善之前期準備工程及昂船洲污水處理廠現有沉澱池之覆蓋及除臭設施工程 ADVANCE PREPARATION WORKS FOR THE EXPANSION AND UPGRADING OF SCISTW AND PROVISION OF COVERS AND DEODOURISATION FACILITIES TO THE EXISTING SEDIMENTATION TANKS AT SCISTW

圖則名稱 drawing title  
**工務工程計劃第341DS號**  
**淨化海港計劃第二期甲 - 建造污水輸送系統及改善昂船洲污水處理廠及初級污水處理廠工程**  
 PWP ITEM No. 341DS  
 HARBOUR AREA TREATMENT SCHEME STAGE 2A -  
 CONSTRUCTION OF THE SEWAGE CONVEYANCE SYSTEM AND  
 UPGRADING OF STONECUTTERS ISLAND SEWAGE TREATMENT WORKS  
 AND PRELIMINARY TREATMENT WORKS

繪畫 drawn	ORIGINAL SIGNED	C.W. CHAN	日期 date	20-10-2008
核對 checked	ORIGINAL SIGNED	W.Y. CHAN	日期 date	20-10-2008
批核 approved	ORIGINAL SIGNED	K.F. SET	日期 date	20-10-2008
部門 office	淨化海港計劃部 HARBOUR AREA TREATMENT SCHEME DIVISION			

圖則編號 drawing no.	比例 scale
DSS/2008/004	AS SHOWN
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**Enclosure 2**

**341DS - Harbour Area Treatment Scheme, stage 2A – construction of the sewage conveyance system and upgrading of Stonecutters Island sewage treatment works and preliminary treatment works**

**List of Committee meetings attended**

<b>District Council/others</b>	<b>Committee</b>	<b>Meeting Date</b>
Central and Western District Council	Food, Environment, Hygiene and Works Committee	8 June 2006
Harbourfront Enhancement Committee	Subcommittee on Harbour Plan Review	12 July 2006
Southern District Council	Planning, Works and Housing Committee	11 December 2006
Eastern District Council	Works and Development Committee	14 December 2006
Kwai Tsing District Council	Planning and Environmental Hygiene Committee	19 December 2006
Sham Shui Po District Council	Environment and Food Committee	11 January 2007
Central and Western District Council	Food, Environment, Hygiene and Works Committee	18 January 2007
Wan Chai District Council	Planning, Transport and Environmental Protection Committee	23 January 2007
Wah Fu and Pokfulam Area Committee	---	22 March 2007
Southern District Council	Planning, Works and Housing Committee	16 April 2007
Sham Shui Po District Council	Environment and Hygiene Committee	22 May 2008
Central and Western District Council	Food, Environment, Hygiene and Works Committee	22 May 2008
Wan Chai District Council	Development, Planning and Transport Committee	27 May 2008
Southern District Council	District Development and Environment Committee	2 June 2008
Kwai Tsing District Council	Community Affairs Committee	10 June 2008
Eastern District Council	Planning, Works and Housing Committee	3 July 2008
Sham Shui Po District Council	Environment and Hygiene Committee	24 July 2008
Harbourfront Enhancement Committee	Subcommittee on Harbour Plan Review	28 July 2008